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(पहला पुनरीक्षण)

Indian Standard

ALPINE SKIS AND BINDINGS — BINDING
MOUNTING AREA — REQUIREMENTS AND
TEST METHODS

(First Revision)

ICS 97.220.20

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BUREAU OF INDIAN STANDARDS
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NEW DELHI 110002

NATIONAL FOREWORD

This Indian Standard (First Revision) which is identical with ISO 8364 : 1991 'Alpine skis and bindings — Binding mounting area — Requirements and test methods' issued by the International Organization for Standardization (ISO) was adopted by the Bureau of Indian Standards on the recommendation of Mountaineering Equipment Sectional Committee and approval of the Basic and Production Engineering Division Council.

This standard was originally published in 1980 and was in conformity with ISO 5144 : 1977 'Alpine skis — Binding mounting area' which has now been replaced by ISO 8364 : 1991 which constitutes a technical revision. The revision has been taken up to harmonize with the latest version of International Standard ISO 8364 : 1991. The following major changes have been included while revising the specification:

- a) Alpine skis have been grouped into 4 groups according to the nominal length.
- b) Strength requirement of binding mounting area and its test methods have been included.

The text of ISO Standard has been approved as suitable for publication as an Indian Standard without deviations. In this adopted standard, certain terminology and conventions are not identical to those used in Indian Standards. Attention is particularly drawn to the following:

- a) Wherever the words 'International Standard' appear referring to this standard, they should be read as 'Indian Standard'.
- b) Comma (,) has been used as a decimal marker while in Indian Standards, the current practice is to use a point (.) as the decimal marker.

In this adopted standard, reference appears to certain International Standards for which Indian Standards also exist. The corresponding Indian Standards which are to be substituted in their place are listed below along with their degree of equivalence for the editions indicated:

<i>International Standard</i>	<i>Corresponding Indian Standard</i>	<i>Degree of Equivalence</i>
ISO 2632-1 : 1985	IS 4290 (Part 1) : 1992 Roughness comparison specimens: Part 1 Turned, ground, bored, milled, shaped and planed (<i>first revision</i>)	Identical
ISO 6004 : 1991	IS 11042 (Part 1) : 1984 Binding screws for alpine skis: Part 1 General requirements	Modified
ISO 6289 : 1985	IS 9317 : 2001 Glossary of terms, definitions and measuring conditions for skis (<i>first revision</i>)	do
ISO 6506 : 1981	IS 1500:1983 Method for Brinell hardness test for metallic materials	do

The concerned Sectional Committee reviewed the provision of ISO 10045 : 1991 referred in this adopted standard and has decided that it is acceptable for use in conjunction with this standard.

In reporting the result of a test or analysis made in accordance with this standard, if the final value, observed or calculated, is to be rounded off, it shall be done in accordance with IS 2 : 1960 'Rules for rounding off numerical values (*revised*)'.

Indian Standard

ALPINE SKIS AND BINDINGS — BINDING MOUNTING AREA — REQUIREMENTS AND TEST METHODS

(First Revision)

1 Scope

This International Standard specifies requirements and test methods for binding mounting areas, ski bindings and retention devices of alpine skis in order to optimize the compatibility of the functional unit "ski-binding — retention device — boot".

It contains data for the manufacturer of alpine skis, bindings and retention devices concerning dimensions, tests and other specifications for the binding mounting area.

This International Standard is applicable to alpine skis of the following nominal lengths:

- group 1: $l_N > 1700$ mm¹⁾
- group 2: 1400 mm $< l_N < 1700$ mm
- group 3: 1000 mm $< l_N < 1400$ mm
- group 4: 750 mm $< l_N < 1000$ mm

The requirements for group 1 are also applicable to adult skis shorter than 1700 mm.

For dimensions with no tolerance indicated, a tolerance of ± 1 mm is valid.

2 Normative references

The following standards contain provisions which, through reference in this text, constitute provisions of this International Standard. At the time of publication, the editions indicated were valid. All standards are subject to revision, and parties to agreements based on this International Standard are encouraged to investigate the possibility of applying the most recent editions of the standards in-

dicated below. Members of IEC and ISO maintain registers of currently valid International Standards.

ISO 2632-1:1985, *Roughness comparison specimens — Part 1: Turned, ground, bored, milled, shaped and planed.*

ISO 6004:1991, *Alpine skis — Ski binding screws — Requirements.*

ISO 6289:1985, *Skis — Terms and definitions.*

ISO 6506:1981, *Metallic materials — Hardness test — Brinell test.*

ISO 10045:1991, *Alpine skis — Binding mounting area — Requirements for test screws.*

3 Definitions

For the purposes of this International Standard, the definitions of ISO 6289, and the following, apply.

3.1 binding mounting: All the connections between the parts of the binding and the ski, especially designed to transmit the forces between binding and ski and which shall fulfil the minimum strength requirements determined for the function of the binding.

4 Specifications of binding mounting area

4.1 Indication of mounting point

The mounting point shall be located by the ski manufacturer with a clearly visible mark at least on the left side and/or the top surface of the ski, up to the left outer edge.

1) To be foreseen in the functional unit, where ski boots of size > 22 (Mondopoint system) are used.

4.2 Length of binding mounting area

The length of the binding mounting area forwards and backwards from the mounting point shall be

- group 1: 275 mm
- group 2: 240 mm
- group 3: 210 mm
- group 4: 190 mm

4.3 Width of binding mounting area

The minimum width of the binding mounting area shall be

- groups 1 and 2: 48 mm
- groups 3 and 4: 46 mm

symmetrical about the longitudinal axis of the ski.

4.4 Centre-to-centre distances for binding mounting screws

4.4.1 Maximum centre-to-centre distance

The maximum centre-to-centre distance perpendicular to the centre line of the ski shall be such that the screws are located entirely within the binding mounting area.

If standard ski binding screws of nominal diameter ST 5,5 are used, the maximum centre-to-centre distance of the binding mounting screws shall be

- groups 1 and 2: 42,5 mm
- groups 3 and 4: 40,5 mm

4.4.2 Minimum centre-to-centre distance

For screws which are used for mounting of parts of the binding and retention devices, the centre-to-centre distance shall not be less than

- groups 1 and 2: 25 mm in the longitudinal direction and 20 mm in all other directions
- groups 3 and 4: 20 mm in the longitudinal direction and 15 mm in all other directions

4.5 Conditions relating to the surface of the binding mounting area

4.5.1 Transverse profile (convexity) of the surface

Deviations of straightness of the transverse profile from a flat profile are only permissible in the form of a constant curve across the width of the mounting area; the tolerance on straightness within this area is given in figure 1.

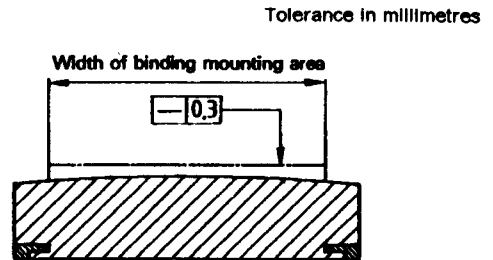


Figure 1 — Transverse profile of the surface

There shall be no step in the profile within a width of

- 55 mm for groups 1 and 2
- 50 mm for groups 3 and 4

symmetrical to the longitudinal axis; outside this area steps are allowed only into the body of the ski.

4.5.2 Longitudinal profile of the surface

Deviations from straightness of the longitudinal profile from a flat profile are only permissible in the form of a constant curve in the length of the mounting area; the tolerance on straightness in this area, the ski base being pressed against a flat surface, is given for

- groups 1 and 2: 5 mm
- groups 3 and 4: 4 mm

in figure 2.

Tolerance in millimetres

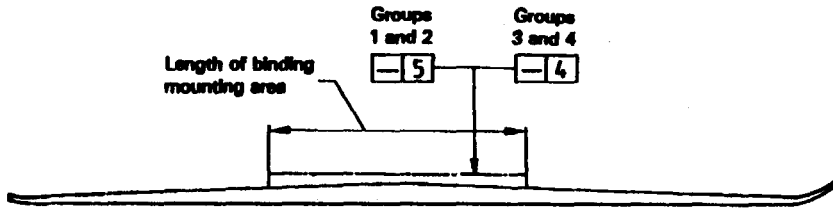


Figure 2 — Longitudinal profile of the surface

4.5.3 Side walls

Side walls shall be designed so that binding mounting with commonly used mounting devices is ensured. The basic requirement is that the clamping elements of the mounting device reach at least to the running surface of the ski.

4.6 Minimum thickness of binding mounting area of ski

Within the total binding mounting area, a drill hole depth, d' , shall be available (see figure 3) as follows:

- groups 1 and 2: 9,5 mm
- groups 3 and 4: 7,5 mm

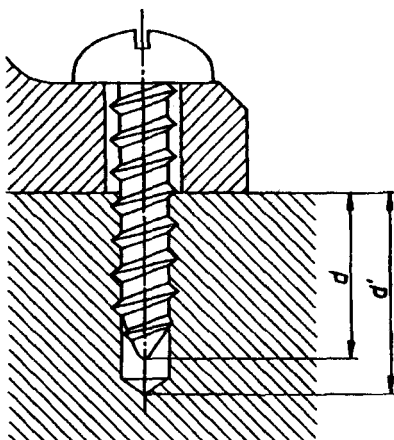


Figure 3 — Penetration depth, d , of mounting screws

5 Strength requirements of binding mounting area

5.1 Screw retention strength

Within the defined binding mounting area, the minimum value of the screw retention strength for two screws, if the load is applied quasi-statically, shall be as follows:

- group 1: 2 200 N min.
- group 2: 1 800 N min.
- group 3: 1 300 N min.
- group 4: 1 300 N min.

5.2 Stripping resistance of the binding mounting area of the ski

The minimum value of the stripping resistance of the ski shall be 5 N·m for groups 1 and 2.

NOTE 1 The present state of the art does not allow a stripping resistance of 5 N·m for skis of groups 3 and 4. It is the responsibility of the ski manufacturer to indicate ski models demanding caution (stripping resistance lower than 5 N·m) when mounting bindings and to give mounting instructions such as smaller diameter drilling and manual screwdriving.

6 Specifications of the binding

The hole-pattern shall be in accordance with the geometrical requirements of 4.2, 4.3 and 4.4.

In order to ensure the required penetration depth, the manufacturer of the binding shall select a suitable length of binding screw, so that after binding mounting the shaft of the screw penetrates the ski. For

- groups 1 and 2: $d = 8 \text{ mm} \pm 0,5 \text{ mm}$
- groups 3 and 4: $d = 6 \text{ mm} \pm 0,5 \text{ mm}$

To avoid damaging the top layers (damage to the adhesive bond) the diameter of mounting plate holes

or countersink facing the ski shall not exceed 7 mm and drill countersink shall be designed in such a way that its penetration into the top surface of the ski does not exceed 0,6 mm.

As mounting elements, ski binding screws in accordance with ISO 6004 shall be used.

7 Apparatus

7.1 Retention strength

7.1.1 **Tensile testing machine** (with a pull-out device according to figure 4), having a minimum load range of 10 000 N.

The pull-out device (see figure 4) shall consist of:

- a steel attachment plate (A) with two holes of diameter 6 mm — steel hardness shall be 135 HB30 according to ISO 6506;
- a universal joint (B) which is connected to the attachment plate and to the clamping device of the test machine;
- a ski support (C) with two support rollers.

When using standard test screws according to clause 8, the following penetration depths, d , shall be reached:

- groups 1 and 2: $d = 8 \text{ mm} \pm 0,5 \text{ mm}$
- groups 3 and 4: $d = 6 \text{ mm} \pm 0,5 \text{ mm}$

7.2 Stripping resistance

7.2.1 **Jig**, for drilling holes, mounting test screws and determination of stripping torque (see figure 5).

The jig, used with a drill bushing, guarantees exact drill holes and screw mounting perpendicular to the top surface of the ski.

The jig is equipped with a friction plate made of steel with hardness of approximately 135 HB30 according to ISO 6506, and surface roughness R_a of $0,8 \mu\text{m}$ according to ISO 2632-1.

When using standard test screws according to clause 8, the following penetration depths shall be reached:

- groups 1 and 2: $d = 8 \text{ mm} \pm 0,5 \text{ mm}$
- groups 3 and 4: $d = 6 \text{ mm} \pm 0,5 \text{ mm}$

Dimensions in millimetres

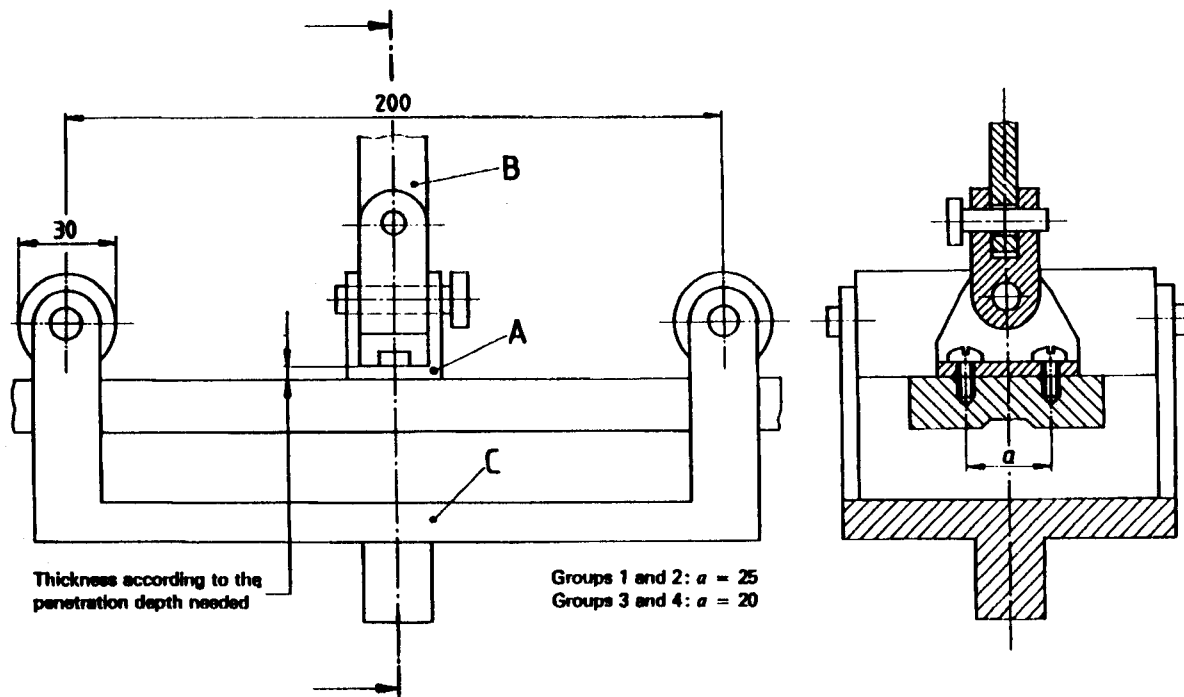


Figure 4 — Tensile testing machine with pull-out device

Dimensions in millimetres

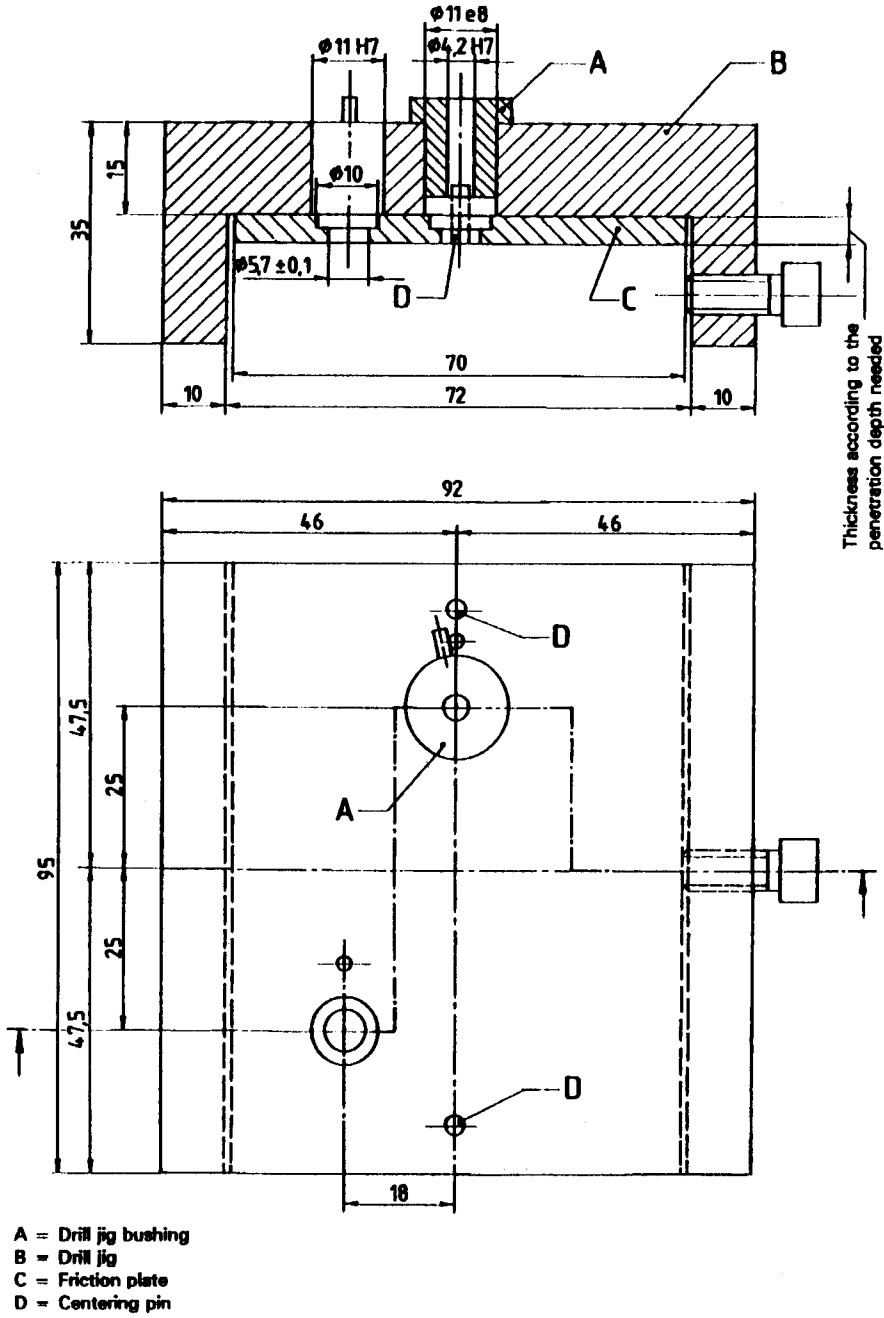


Figure 5 — Drill and test jig

8 Test screws

The screws used for the retention and stripping tests shall be in accordance with ISO 10045.

9 Procedure

9.1 Sampling and conditioning

Carry out the test on three pairs of skis at a room temperature of $23\text{ }^{\circ}\text{C} \pm 5\text{ }^{\circ}\text{C}$, without specific pre-conditioning of the ski to be tested.

9.2. General requirements

Test the requirements of 4.1 to 4.6 by measurement and/or sight check.

9.3 Retention strength test

9.3.1 Mounting of the attachment plate

It is recommended that a drill jig be used to ensure exact drill holes, perpendicular to the top surface of the ski, and at the exact distance apart.

Ensure that the dimensions of the drill holes are as follows:

- drill hole diameter: $\varnothing 4,1\text{ mm H12}$

- drill hole depth:

groups 1 and 2: $9\text{ }^{\begin{matrix} +0,5 \\ 0 \end{matrix}}\text{ mm}$

groups 3 and 4: $7\text{ }^{\begin{matrix} +0,5 \\ 0 \end{matrix}}\text{ mm}$

Ensure that the drill countersink is in accordance with clause 6.

Ensure that the screws are mounted perpendicular to the top surface of the ski, without pretapping and without lubrication.

Tightening torque:

- groups 1 and 2: $4 \pm 0,5\text{ N.m}$

- groups 3 and 4: $3 \pm 0,5\text{ N.m}$

9.3.2 Positioning of the pull-out tests within the binding mounting area

The location of the pull-out tests within the binding mounting area is shown in figure 6. Locations 1 and 2 are those which are specified by this International Standard. Choose locations 3 and 4 at random, but ensure that the distance with respect to the side of the mounting area is as specified in figure 6. The minimum spacing in the longitudinal direction, a , is

- groups 1 and 2: 25 mm

- groups 3 and 4: 20 mm

Ensure that the tests are not influenced by the preceding tests. If the top skin is delaminated during a retention test, continue the test on another ski.

Dimensions in millimetres

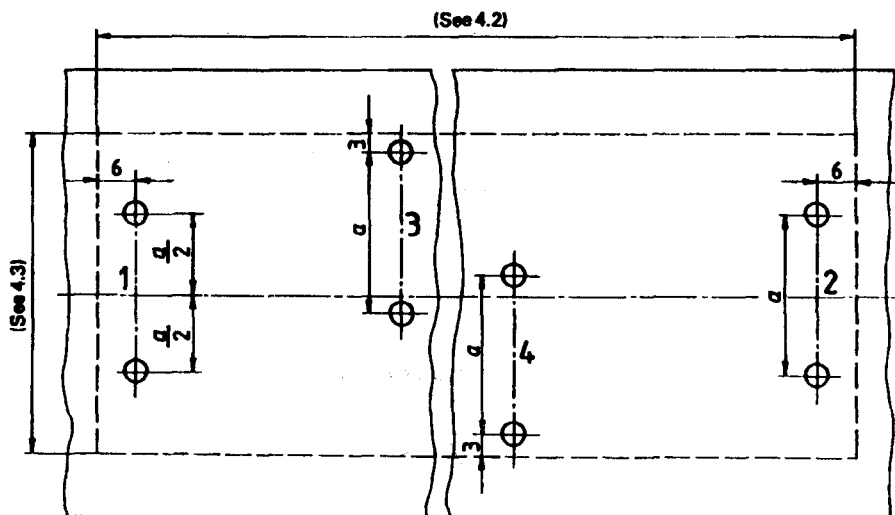


Figure 6 — Positioning of the pull-out tests within the binding mounting area

9.3.3 Load application

Ensure that the loading rate is quasi-static, not more than 20 mm/min.

Measure the maximum load which is applied during the load application.

Measuring accuracy: ± 50 N.

9.4 Stripping resistance test

9.4.1 Use the test jig with a drill bushing to drill a hole with $\varnothing 4,1$ mm H12 ($^{+0,12}_0$ mm) and a depth of 8,5 mm for groups 1 and 2, and 6,5 mm for groups 3 and 4.

Where a smaller drill diameter is recommended by the ski manufacturer, complementary tests according to the ski manufacturer's recommendation will be for information only.

9.4.2 Mount and tighten the test screw, always with the test jig as a guide, without the drill bushing. Apply an increasing torque with a torque wrench screwdriver until a drop of the torque resistance indicates failure of the thread or until the load equals the tightening moment specified in 5.2.

Ensure that the vertical force applied to the screwdriver is less than 500 N.

Carry out the test with a minimum of 10 different screws of the same type.

Use a new hole in the friction plate for each test.

10 Test report

The test report shall include the following information:

- a) reference to this International Standard;
- b) ski brand, model designation, nominal length, year of manufacture and serial number;
- c) testing machine: type, load range and loading rate;
- d) sketch showing locations 1, 2, 3 and 4;
- e) test results on three pairs of skis and type of failure for groups 1, 2, 3 and 4, respectively;
- f) test results of stripping resistance on three pairs of skis;
- g) any deviation from this International Standard and reasons for this deviation.

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Amendments are issued to standards as the need arises on the basis of comments. Standards are also reviewed periodically; a standard along with amendments is reaffirmed when such review indicates that no changes are needed; if the review indicates that changes are needed, it is taken up for revision. Users of Indian Standards should ascertain that they are in possession of the latest amendments or edition by referring to the latest issue of 'BIS Catalogue' and 'Standards: Monthly Additions'.

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Amendments Issued Since Publication

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